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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/668,586	09/23/2003	John S. Hsu	920976.00005	2411

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EXAMINER

TAMAI, KARL I

ART UNIT	PAPER NUMBER
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2834

DATE MAILED: 04/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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# Office Action Summary

Application No.

10/668,586

Applicant(s)

HSU, JOHN S.

Examiner

Tamai I.E. Karl

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 16 February 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 8-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 8, 20 and 21 is/are allowed.
- 6) ☒ Claim(s) 1-6 and 9-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The rejection of Claims 1, 2, 5, 9, 11-15, 17, 18, and 19 under 35 U.S.C. 102(b) over Rosenberg (US 3411027) is withdrawn.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 2, 5, 9, 11-15, 17, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenberg (US 3411027) and Reiter, Jr. et al. (Reiter) (US 5191256). Rosenberg teaches a machine (motor or generator) with a radial air gap stator and rotor, where the rotor with a core and pole pairs 25, 26 of opposite polarity and axial extensions 24 extending towards secondary air gaps which include axial and radial air gaps. Rosenberg teaches DC secondary excitation coils 37, 38, where the flux in the air gap is increased or decreased based upon the direction of the current through the coil. It is inherent the permanent magnets 27 on the rotor contains the excitation flux entering the pole pieces 25, 26 to the radial air gap and inhibit flux leakage from the pole portions due to the air gap between the poles pieces 26 and cylindrical core to increase the flux in the radial air gap of Figure 3-4. Rosenberg shows

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the rotor being cylindrical with magnets 27 in grooves with pole pieces 26 to form poles of alternating polarity separated by PM material, and an axial projection 24 extending towards the axial/radial airgaps between 39/40. The apparatus is inherently an AC synchronous generator when the shaft is driven rotated by an external power source.

Rosenberg teaches every aspect of the invention except the permanent magnet material between the poles and the rotor core. Reiter teaches rotor having permanent magnet material between the poles and the rotor core to provide an efficient, low cost, easily assembled rotor with reduced flux leakage. Reiter teaches the equivalence of the rotor poles formed with a gap between the magnets (figure 9) and with a solid permanent magnet pole (figures 7 and 10). It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the machine of Rosenberg with permanent magnet material between the rotor poles and the core to provide an efficient, low cost, easily assembled rotor with reduced flux leakage as taught by Rieter, and because it is within the ordinary skill in the art to choose between know equivalents.

4. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenberg (US 3411027) and Reiter, Jr. et al. (Reiter) (US 5191256), in further view of Gay et al. (Gay)(US 2002/0117907). Rosenberg and Reiter teach the excitation core is magnetic material. Rosenberg teaches every aspect of the invention except the material of the excitation core being iron, steel, iron alloy, or compressed ferromagnetic power. Gay teaches compressed iron particles core because they have reduced eddy

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current losses. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the machine of Rosenberg and Reiter with the magnetic material of the cores being compressed iron particles to reduce eddy current losses.

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenberg (US 3411027) and Reiter, Jr. et al. (Reiter) (US 5191256), in further view of Noda et al. (Noda)(JP 2000-278899). Rosenberg and Reiter teach every aspect of the invention except shallow surface slits on the circumference and along the axial direction to reduce harmonic slot losses. Noda teaches shallow slits on the surface of the rotor to reduce harmonics losses. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the machine of Rosenberg and Reiter with the shallow surface slits to reduce noise as taught by Noda.

6. Claims 10 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenberg (US 3411027) and Reiter, Jr. et al. (Reiter) (US 5191256), in further view of Roa et al. (Roa)(US 6097124). Rosenberg and Reiter teach every aspect of the invention except the machine being a brushless AC machine. Roa teaches a brushless, permanent magnet machine with a field adjusting coil 112 can be operated as an DC or AC, motor or generator. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the machine of Rosenberg and Reiter with the machine operating as a DC machine because Roa teaches that the PM machines can be operated with or produce either AC or DC current, and because the machine can be operated from a battery or an AC outlet.

***Allowable Subject Matter***

7. Claims 8, 20, and 21 are allowed.

***Response to Arguments***

8. Applicant's arguments filed 2/16/2006 have been fully considered but they are not persuasive. Applicant's arguments and the Declaration by John Hsu, regarding the magnets between the core and pole pieces to inhibit flux is not persuasive, because Reiter clearly teaches the magnet so positioned to provide an efficient, low cost, easily assembled rotor with reduced flux leakage. Applicant's and Dr. Hsu arguments regarding the control flux provided through the poles rather than the magnets is not persuasive. The flux from the coils 37 and 38 travel through the core 24 and to the rotor poles, where the magnets 27 are providing magnet flux circumferentially to the poles and the coils control the amount of flux that passes to the stator core. Applicant's arguments regarding the shaft as the rotor core are moot in view of the new grounds of rejection.

***Conclusion***

9. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karl I.E. Tamai whose telephone number is (571) 272 - 2036. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Darren Schuberg, can be reached at (571) 272 - 2044. The facsimile number for the Group is (571) 273 - 8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Karl I Tamai  
PRIMARY PATENT EXAMINER  
April 17, 2006

KARL TAMAI  
PRIMARY EXAMINER

